

## Carpal Tunnel Syndrome

Carpal tunnel syndrome (CTS) is a common problem affecting the hand and wrist. The most common symptom of carpal tunnel syndrome is a tingling sensation (called "paresthesia") that occurs in the thumb, index and middle fingers of the hand. As the disorder progresses, the tingling may become more persistent and painful. Weakness of the hand muscles may also develop. Carpal tunnel syndrome has received a lot of attention in recent years because of suggestions linking with occupations that require repetitive hand use, such as typing on a computer keyboard or doing assembly work.

Carpal tunnel syndrome really affects the median nerve, one of three large nerves that begins near the shoulder and extends all the way into the hand. The "carpal tunnel" is actually a space created by the bones at the base of the hand (called the carpals) and a ligament. This small space is the channel through which many important structures enter the hand: the flexor tendons, blood vessels, and the median nerve, among others. When the median nerve gets squeezed inside the carpal tunnel of the wrist, a "nerve entrapment" may result causing the symptoms of CTS.

Any condition that makes the area inside the carpal tunnel smaller, increases the size of the tissues within the tunnel, or creates abnormal pressure inside the tunnel can lead to symptoms of CTS. Most often, a prolonged downward bent (flexed) wrist posture and/or repetitive use of the flexor tendons create this situation. However, other circumstances may cause the nerve entrapment. For example, a traumatic wrist injury or fracture may cause swelling and extra pressure within the carpal tunnel. Various types of arthritis can cause swelling and pressure in the carpal tunnel. Pregnancy can cause fluid to be retained, leading to extra pressure in the carpal tunnel. Fractured wrist bones may later cause CTS if the healed fragments result in abnormal functioning of the flexor tendons.

Not all cases of hand tingling are carpal tunnel syndrome. Besides the median nerve, the ulnar and radial nerves also enter the hand and may produce tingling symptoms injured. Because the origin of these nerves is in the neck and shoulder region, disorders in these areas may produce similar symptoms. The nerve conduction velocity (NCV) test, which measures how fast a nerve transmits signals, usually confirms a case of carpal tunnel syndrome. Oftentimes, neck and shoulder problems create nerve entrapments that accompany a true carpal tunnel syndrome. This creates a "double-crush" phenomenon.

Treatment for carpal tunnel syndrome largely depends on the duration of symptoms. Treated early, non-surgical interventions such as splinting, medication, and physical therapy may resolve the problem especially if there are also neck and shoulder problems. The main focus of treatment is to reduce or eliminate the cause of pressure in the carpal tunnel. Proper body and wrist alignment, various stretching and strengthening exercises, and/or workstation modifications may be recommended. More advanced cases of CTS may require surgery to relieve the pressure in the carpal tunnel. This is accomplished by cutting the ligament that forms the carpal tunnel, producing additional space for the structures passing through it and reducing pressure on the median nerve.

The above is intended as general information only. Be sure to contact your physician for advice on your own specific medical problems.